

Note: Use 4 decimal places in your answers when rounding or using the Standard Normal Table.

1. Suppose the length of an adult Manatee is normally distributed with mean 10 feet and standard deviation of 1.2 feet. If you encounter an adult Manatee, what is the probability that it will exceed 9 feet in length?

2. Using the following data regarding the price of computer printers, find the mean, median and mode. Round answers to 2 decimal places, if needed.

\$315, \$380 \$440, \$430, \$470, \$485, \$520, \$435, \$430, \$340, and \$505

3. A game is played with a fishpond containing 100 fish: 90 white, 9 red, and 1 blue. A contestant randomly catches a fish and receives payment as follows: \$0.30 for white, \$1.00 for red, and \$10.00 for blue. If it costs \$0.60 to play this game, how much (on average) does a contestant win on each play?

4. Find the standard deviation for the probability density function below,

X	Prob		
-2	0.10		
-1	0.15		
0	0.15		
1	0.10		
3	0.50		

#5-6: A fair die is rolled 90 times. The random variable X is the number of times the die shows a "3".

5. Find the expected value of X .

6. Find the standard deviation of X .

7. The heights of ten men recruited as sailors on a submarine are listed below. Find the mean, median and mode:

5'10", 6'0", 5'9", 4'10", 5'4", 5'8", 5'10", 5'9", 6'1", 5'8"

#8-10: Using the standard normal probability table, find:

8. $\Pr[-2.08 \leq Z \leq 1.93]$

9. $\Pr[Z \leq -0.65]$

10. $\Pr[Z \geq 1.29]$

11. Poochie graduates college with 120 credits. He earned grades of A in 24 credits; grades of A- in 26 credits; grades of B+ in 15 credits; grades of B in 32 credits; grades of B- in 14 credits; grades of C+ in 3 credits and D- in 6 credits. If his school uses a 4-point scale (e.g. A = 4.0, A- = 3.67, B+ = 3.33, B = 3.0, etc...), what is Poochie's GPA?

12. A stockbroker believes that 30% of the stocks will go up each month. If she selects 20 stocks at random, find the probability that at most 5 of the stocks will increase in value.

13. A group of 60 children are divided into two groups, A and B, for a dentistry study comparing two different brands of toothpaste. The table below gives the relative frequency of the number of cavities over a four-year period. Calculate the mean number of cavities of each group.

Number of cavities	Frequency (Group A)	Frequency (Group B)
0	8	11
1	3	5
2	7	6
3	6	3
4	3	3
5	3	2

14. Suppose that the weights of cyclists in a race were normally distributed with a mean of 174 pounds and a standard deviation of 12 pounds. Find the probability that a cyclist weighs between 170 and 180 pounds.

15. [a] Find the missing values for a, b, c, d, e, f , and g .
 [b] Find the variance.
 [c] Find the standard deviation.

X	$\Pr[X]$	$X \cdot \Pr[X]$
a	0.2	2
8	0.1	b
5	c	0.5
3	d	e
f	0.4	g
		$E[X] = 2.5$

16. Suppose 10% of all people are left-handed. If 450 people are selected at random,

(a) what is the expected number of left-handed people in the sample?

(b) what is the standard deviation?

(c) what is the probability that there is at most 55 left-handed people in the sample?

(d) what is the probability that there is at least 30 but no more than 60 left-handed people in the sample?

17. A jar contains 4 red marbles and 6 blue marbles. You reach in and randomly select two marbles. If X represents the number of blue marbles you selected, find the expected value of X .

18. Assume that IQ scores are normally distributed with a mean of 100 and a standard deviation of 15.

[a] If people are identified for special education when their IQ score is in the lowest 1 percent of the population, what IQ score (to the nearest whole number) would a person need to receive special education?

[b] What IQ score (to the nearest whole number) does 35% of the population exceed?

19. The probability that an experiment fails is 0.4. If the experiment is repeated 100 times, find the probability that:

[a] exactly 60 successes occur.

[b] at least 60 successes occur.

[c] between 56 and 62 successes occur (inclusively).